

TITLE: STAR AND DUST FORMATION ACTIVITIES IN AzTEC-3:
A STARBURST GALAXY AT $z = 5.3$

ABSTRACT:

Analyses of high-redshift ultraluminous infrared (IR) galaxies traditionally use the observed optical to submillimeter spectral energy distribution (SED) and estimates of the dynamical mass as observational constraints to derive the star formation rate (SFR), the stellar mass, and age of these objects. In this lecture we add this constraint to the analysis of AzTEC-3, a starburst galaxy at $z=5.3$. We construct different stellar and chemical evolutionary scenarios, constrained to produce the inferred dust mass and observed luminosity before the associated stellar mass exceeds the observational limit. A robust result of our models is that all scenarios require most of the radiating dust mass to have been accreted in molecular clouds. Our new procedure highlights the importance of a multiwavelength approach, and of the use of dust evolution models in constraining the age and the star formation activity and history in galaxies.